EXPERIMENT 5: Acceleration

DATA TABLE 1: Height of ramp: _____m; Angle of incline = ____ °

TRIAL No.	Distance (x) – m	Time (t) - seconds	Velocity (v) – m/s	Acceleration (a) – m/s^2
1	.30			
2	.30			
3	.30			
4	.30			
5	.30			
		Average =	Average =	Average =
6	.60			
7	.60			
8	.60			
9	.60			
10	.60			
		Average =	Average =	Average =
11	.90			
12	.90			
13	.90			
14	.90			
15	.90			
		Average =	Average =	Average =

Calculations: Notice that your data consists of times (t) and distances (x). In order to calculate acceleration you must use the four equations of motion. First work with Equation 2:

Equation 2: $x = (v/2)t$

Rewriting to isolate v, the equation becomes:

Equation 2: $v= (2x)/t$

You already know the distance, x and the time, t. Now you can solve for velocity, v, by using Equation 2 in this form. Fill in v for each trial on your data sheet. Use Equation 1 to find acceleration, but first it must be rewritten to isolate the variable (a).

Equation 1: $v=at$ divide both sides of the equation by (t):

$a= v/t$

With Equation 1 rewritten in this way it is easy to solve for acceleration, a using time, t from your data sheet and velocity, v that you already calculated. Fill in the value for acceleration in each trial on your calculation table.